climeworks
Remove to zero

Removing to net zero: 5 carbon removal insights for CSOs

To limit global warming and act on the climate emergency, emissions reductions are a priority, but not sufficient. Corporate net zero targets won't be achieved without carbon removal.

Both reduce and remove emissions

1

Insight 1

Both reduce and remove emissions

As companies build a strong roadmap on decarbonization, they also need to manage present and future hard-to-abate-emissions, and to take responsibility for the emissions produced in the past. Carbon Dioxide Removal (CDR) cannot substitute for immediate and deep emissions reductions, but it is part of all modeled scenarios that limit global warming to 2°or lower by 2100 to supplement mitigation.

Science Based Target Initiative (SBTi) recommends that companies take action to mitigate emissions outside their value chains. In **beyond-value-chain mitigation**, companies are expected to purchase high-quality CDR in addition to their near-term and long-term science-based targets.

→ "The deployment of CDR to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO_2 or GHG emissions are to be achieved. By mid-century, **we need to remove 3-12 Gt of CO_2** every year in order to limit global warming."

IPCC Sixth Assessment Report

→ "Companies should take action or make investments outside their own value chains to mitigate GHG emissions in addition to their near-term and long-term science-based targets. For example, a company could provide annual support to projects, programs and solutions providing quantifiable benefits to climate, especially those that generate additional co-benefits for people and nature."

SBTi Corporate Net-zero standard

Rich Lesser

Global Chair of Boston Consulting Group

BCG

"We have a responsibility, every one of us in every firm, to accelerate on that journey. Early investments can change the curve and will benefit companies and benefit everyone.

I see a lot of emphasis on reductions, and I don't think enough companies are embracing where removals fit in that journey."

Climeworks and BCG have signed in 2021 a 10-year carbon removal agreement. **Read more here**

Start removing CO_2 now

2

Insight 2

Start removing CO_2 now

We must collectively go to net zero and need to work on the plan now if we want to accomplish it in 2050. Waiting is not an option.

Climate inaction includes a lot of risks for corporations, nature and climate:

- **Reputational risk:** climate decisions of company boards are under high scrutiny. A credible sustainability strategy requires impactful action.
- **Commercial and financial risk:** all stakeholders, including investors, customers, and employees, expect corporate climate action, and failing to meet these expectations can lead to both direct and indirect harm to companies.
- **Regulation risk:** every company should anticipate their potential liability for future emissions and tackle this challenge today. In the near to medium future, carbon markets are likely to undergo increased regulation to enhance consistency, bolster the integrity of sustainability reporting, and meet stakeholder demands for transparent and comparable sustainability data.
- **Supply risk:** Considering the anticipated limitations in the supply of carbon removal, purchasers who restrict or postpone their acquisitions might end up paying a higher cost in the future or, in the worst-case scenario, might be unable to obtain sufficient durable Carbon Dioxide Removal (CDR) to fulfill their obligations.

Companies must prioritize securing carbon removal capacity as a pressing need.

→ "Demand for durable CDR is projected at ~40–200 Mt CO_2 in 2030, growing significantly to ~80–870 Mt CO_2 in 2040. Given the projected supply constraints, buyers that limit or delay their credit purchases may have to pay a premium in the future or ultimately fail to secure durable CDR to meet their commitments. Companies also face growing pressure, from both regulators and increasingly aware customer bases, for their responsibility in fighting climate change. Securing access to durable CDR today is not only a risk management strategy but also a sensible investment."

BCG Climate Needs and Market Demand Drive Future for Durable CDR Report

"We estimate that most of the carbon removal capacity that will be available in 2030 will have been designed by 2025."

Climeworks and Microsoft have signed in 2021 a 10-year carbon removal offtake agreement. **Read more here**

Brandon Middaugh

Senior Director, Climate Innovation Fund at Microsoft Sustainability

Microsoft

Define your company's carbon removal criteria

3

Insight 3

Define your company's carbon removal criteria

To evaluate the quality, potential, and risks of different Carbon Dioxide Removal (CDR) approaches, some principles need to be defined based on carbon removal offsets quality drivers (high durability, high scalability, high co-benefit, no harm, high integrity).

Once companies have defined high-quality CDR solutions, they need to select projects based on their preferences, risk tolerance, and strategic alignment. They must also evaluate how well a CDR technology aligns with their specific goals.

Companies can seek partnerships with carbon removal experts to gain insights, build expertise, and share their expertise broadly.

Today, there are abundant shared resources available to any company eager to begin their journey with CDR. **Microsoft**, **Stripe**, **Shopify**, and **JP Morgan & Chase** as early purchasers of CDR have assessed and selected the highest-quality solutions based on specific criteria and shared their learnings openly to help other businesses do the same.

→ The Integrity Council for the Voluntary Carbon Market (IC-VCM) has published a comprehensive set of global standards for carbon removal quality and defined 10 Core Carbon Principles :

Effective governance / Tracking / Transparency / Robust independent third-party validation and verification / Additionality / Permanence / Robust quantification of emission reductions and removals / No double counting / Sustainable development benefits and safeguards / Contribution toward net zero transition

Assessment framework from ICVM's Core carbon principles

Stacy Kauk

Head of Sustainability, Shopify

"Shopify has been buying carbon removal since 2020, and we've realized that it doesn't need to be complex or time-consuming. It's not just for companies with large sustainability teams and budgets. And it's not just for certain sectors of the economy. Anyone and everyone can and should get involved and start building for the future today."

Shopify was one of the earliest buyers of carbon removal and continues to be a trailblazer in the industry. **Read more here**

Develop a diverse portfolio of high-quality carbon removal offsets

4

Develop a diverse portfolio of high-quality carbon removal offsets

Utilizing a portfolio-based approach to invest in a range of nature-based and technological removal solutions fosters synergies, minimizes trade-offs among these options, and ensures resilience against fluctuations in performance and availability. This strategy enables companies to support various carbon removal methods, fostering innovation and development in the field. Moreover, a diversified portfolio can align with a wider spectrum of corporate sustainability objectives, resonate with a broader audience, and contribute to environmental justice by backing projects in different regions and communities.

A portfolio of offsets must evolve towards permanent carbon removal over time.

→ "A net-zero-aligned portfolio of offsets must increase the portion of carbon removals over emission reductions, and the portion of long-lived storage."

Oxford net zero principles

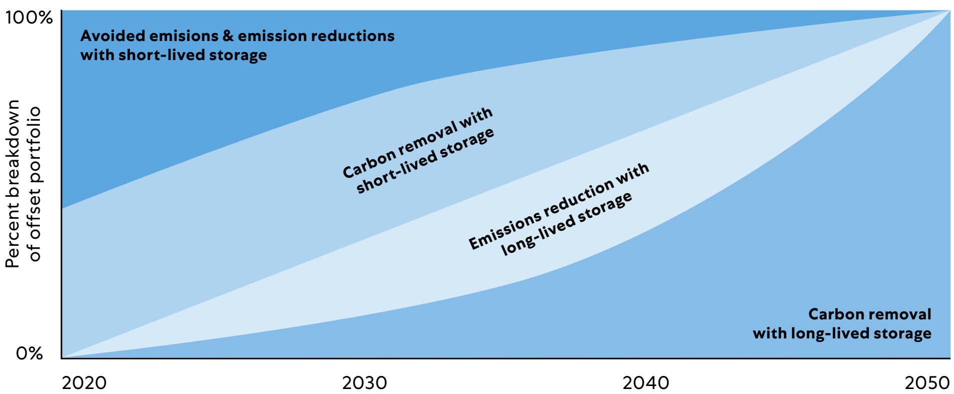

Figure: Example net zero aligned offsetting trajectory from Oxford net zero principles

Mischa Repmann

Senior Sustainability Risk Manager, Swiss Re

Swiss Re

"The private sector can give the nascent carbon removal market a perspective by setting an internal carbon price. This price is then a good reason to reduce emissions in the first place before it pays for the removal of remaining emissions. At Swiss Re, we implemented an internal carbon price of USD 100 per tonne of CO2 in 2021, which will gradually increase to USD 200 per tonne of CO2 by 2030."

Swiss Re's purchase agreement with Climeworks shows the company's support for the carbon removal industry. **Read more here**

Communicate externally, join and amplify the movement

5

Insight 5

Communicate externally, join and amplify the movement

Companies can build support and trust, as well as leverage thought leadership opportunities associated with investing in early-stage carbon removal, by transparently advocating and communicating their carbon removal initiatives to employees, customers, and investors.

As climate-related challenges intensify, investors are increasingly eager to assess companies' progress in meeting emission reduction targets and gauging the climate-related risks associated with their investments.

→ "Companies need to communicate transparently with all stakeholders and disclose details on the carbon credits purchased, including emissions impact, carbon financing and co-benefits."

World Economic Forum, Scaling Voluntary Carbon Markets: A Playbook for Corporate Action

→ "Businesses purchasing voluntary carbon are more likely to report lower gross emissions year-on-year, and invest more in emissions reductions, than companies not engaged in carbon markets."

Study by Forest Trends' Ecosystem Marketplace

→ "Buying clubs, so far, have attracted strong media attention, which has helped build awareness and momentum for CDR solutions among a broader group of stakeholders. Buyers' clubs can help send a demand signal to suppliers and investors that there is a market for carbon removal and to begin building quickly."

McKinsey, CO_2 removal solutions: A buyer's perspective

Brian DiMarino

Managing Director, Head of Operational Sustainability at JPMorgan Chase & Co

JPMORGAN CHASE & CO.

"The voluntary carbon market needs science-based and equitable criteria to ensure carbon credits represent genuine emissions reduction or removal. That is why we seek to deliver on a science-driven strategy for carbon management. For instance, in making a public commitment this year to match every ton of our unabated direct operational emissions with durable carbon removals by 2030, we sent a signal to the market of approximately 80,000 tons in demand annually that we would be seeking to remove.

Signals matter to move demand forward. Building alignment around robust principles and enhancing accountability and transparency are also necessary to increase confidence and mitigate risk, which will strengthen the utility of the market for all participants."

In May 2023, Climeworks and JPMorgan Chase & Co. **made a groundbreaking announcement** and revealed one of the largest corporate investments in CDR within the direct air capture industry (DAC).

Remove the hot air
Remove the cold feet
Remove the CO_2

You reduce the CO_2 you can, we remove the CO_2 you can't.

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The climate science is clear: reaching net zero requires both drastic CO_2 emissions reduction and complementary permanent carbon removal.

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